# Closure, Post-Closure Cost Estimation Form

0
0
0
0

| | |
|---|---|
| **Total Closure Cost** | $0 |
| **Total Post - Closure Cost** | $0 |
| **Total Closure + Post Closure** | $0 |

**Worksheet 1: FORMAT FOR THE ESTIMATION OF CLOSURE COSTS**

Facility Name:
Permit Number:
Facility Address:

Facility Owner:
OPM Representative Completing Format:
Date Completed:

Sanitary and Industrial Landfills: Closure Costs - all sections except Section X
Post Closure - Post-Closure - all sections
CDD Landfills: Closure Costs - Sections X, XII, XIII, XIV, XV, XVI, XVII
Post Closure - Post-Closure - all sections

***FILL IN THE BOXES. THE REST WILL BE CALCULATED FOR YOU***

| | | | *Notes and Guidance Values* | | |
|---|---|---|---|---|---|
| ***I.*** | **NATIVE SOIL FOR SLOPE AND FILL** | | | | |
| a. | Area to be capped | | acres x 4840 yd2/acre= | 0 | yd2 |
| b. | Depth of native soil for slope and fill | | inches x 1yd/36in= | 0.00 | yd |
| c. | Quantity of native soil needed | | a x b | 0 | yd3 |
| d. | Percentage of soil from off-site | | % | 0% | |
| e. | Purchase Unit cost off-site material (to include delivery cost) | | per yd3 | $0.00 | /yd3 |
| f. | Percentage of soil from on-site | 100% | (1 - d) | 100% | |
| g. | Excavation unit cost (on-site material) | | per yd3 | $0.00 | per yd3 |
| h. | Total soil unit cost | | (d x e + f x g) | $0.00 | |
| i. | Placement and Spreading Unit Cost | | per yd3 | $0.00 | per yd3 |
| j. | Compaction unit cost | | per yd3 | $0.00 | per yd3 |
| k. | Total soil unit cost | | (h + I + j) | $0.00 | /yd3 |
| l. | Total native soil cost | | | $0.00 | |
| m. | Percent compaction | 25% | | 25% | |
| 0 | *Total Native Soil Cost* | | *(h) x (1 + l)* | ***$0*** | |

## *II.* TOPSOIL

| | | | | | |
|---|---|---|---|---|---|
| a. | Area to be capped | 0 | acres x 4840 yd2/acre | 0 | yd2 |
| b. | Depth of topsoil needed | | in x 0.028 yd/in | 0.00 | yd |
| c. | Quantity of topsoil needed | | a x b | 0 | yd3 |
| d. | Percentage of soil from off-site | | % | 0% | |
| e. | Purchase Unit cost off-site material (to include delivery cost) | | per yd3 | $0.00 | /yd3 |
| f. | Percentage of soil from on-site | 100% | (1 - d) | 100% | |
| g. | Excavation unit cost (on-site material) | | per yd3 | $0.00 | per yd3 |
| h. | Total soil unit cost | | (d x e + f x g) | $0.00 | |
| i. | Placement and Spreading Unit Cost | | per yd3 | $0.00 | per yd3 |
| j. | Compaction unit cost | | per yd3 | $0.00 | per yd3 |
| k. | Total soil unit cost | | (h + I + j) | $0.00 | /yd3 |
| l. | Total soil cost | | | $0.00 | |
| m. | Percent compaction | 25% | | 25% | |
| o | *Total Topsoil Cost* | | *(h) x (1 + l)* | **$0** | |

## *III.* DRAINAGE LAYER

| | | | | | |
|---|---|---|---|---|---|
| a. | Area to be capped | | acres x 4840 yd2/acre | 0 | yd2 |
| b. | Depth of sand or gravel needed | | in x 0.028 yd/in | 0 | yd |
| c. | Quantity of sand or gravel needed | | a x b | 0 | yd3 |
| d. | Purchase unit cost for material or excavation cost | | per yd3 | $0.00 | per yd3 |
| e. | Delivery Cost (for delivery of off-site material; dependent upon haul distance) | | per yd3 | $0.00 | per yd3 |
| f. | Spreading unit cost for material | | per yd3 | $0.00 | per yd3 |
| g. | Compaction unit cost for material | | per yd3 | $0.00 | per yd3 |
| h. | Total material cost | | (d + e + f + g) | $0.00 | per yd3 |
| i. | Percent compaction | 25% | (%/100) | 25% | |
| *j* | *Total Drainage Layer Cost* | | *[c x h x (1 +i)]* | ***$0*** | |

## *IV.* ON-SITE CLAY

| | | | | | |
|---|---|---|---|---|---|
| a. | Area to be capped | | acres x 4840 yd2 | 0 | yd2 |
| b. | Depth of clay needed | | in x (1/36)yd | 0.00 | yd |
| c. | Quantity of clay needed | | a x b | 0 | yd3 |
| d. | Excavation unit cost | | per yd3 | $0.00 | per yd3 |
| e. | Placement/spreading unit cost | | per yd3 | $0.00 | per yd3 |
| f. | Compaction unit cost | | per yd3 | $0.00 | per yd3 |
| g. | Total on-site clay unit cost | | (d + e + f) | $0.00 | per yds |
| h. | Percent compaction | 25% | %/100 | 25% | |
| *i.* | *Total On-Site Clay Cost* | | *[c x g x (1+h)]* | ***$0*** | |

## V. OFF-SITE CLAY

| | | | | | |
|---|---|---|---|---|---|
| a. | Area to be capped | | acres x 4840 yd2 | 0 | yd2 |
| b. | Depth of clay needed | | in x (1/36)yd | 0 | yd |
| c. | Quantity of clay needed | | a x b | 0 | yd3 |
| d. | Purchase unit cost | | per yd3 | $0.00 | per yd3 |
| e. | Delivery unit cost (for off-site material) | | per yd3 | $0.00 | per yd3 |
| f. | Placement/spreading unit cost | | per yd3 | $0.00 | per yd3 |
| g. | Compaction unit cost | | per yd3 | $0.00 | per yd3 |
| h. | Total off-site clay unit cost | | (d + e + f + g) | $0.00 | per yd3 |
| i. | Percent compaction | 25% | %/100 | 25% | |
| *j.* | *Total Off-Site Clay Cost* | | *[c x h x (1 + i)]* | ***$0*** | |

## VI. DRAINAGE TILE

| | | | | | |
|---|---|---|---|---|---|
| a. | Length of drainage tile needed | | LF | 0 | LF |
| b. | Tile unit cost | | per LF | $0.00 | per LF |
| c. | Trenching and backfilling cost | | per LF | $0.00 | per LF |
| d. | Total drainage tile unit cost | | (b+c) | $0.00 | per LF |
| *e.* | *Total Drainage Tile Cost* | | *(a x d)* | ***$0*** | |

## VII. SYNTHETIC MEMBRANE

| | | | | | |
|---|---|---|---|---|---|
| a. | Area to be capped with FML | | acres x 43560 ft2/acre | 0 | ft2 |
| b. | Purchase unit cost | | | $0.00 | /ft2 |
| c. | Installation unit cost | | | $0.00 | /ft2 |
| d. | Total synthetic membrane unit cost | | (b + c) | $0.00 | /ft2 |
| *e.* | *Total Synthetic Membrane Cost* | | *(a x d)* | ***$0*** | |

## VIII. GEOTEXTILE FILTER FABRIC

| | | | | | |
|---|---|---|---|---|---|
| a. | Quantity of filter fabric needed | | acres x 43560 ft2/acre= | 0 | ft2 |
| b. | Purchase unit cost | | | $0.00 | /ft2 |
| c. | Installation unit cost | | | $0.00 | /ft2 |
| d. | Total geotextile filter fabric unit cost | | (b + c) | $0.00 | /ft2 |
| *e.* | *Total Geotextile Filter Fabric Cost* | | *(a x d)* | ***$0*** | |

## VIII. GEONET COMPOSITE

| | | | | | |
|---|---|---|---|---|---|
| a. | Quantity of Geonet Composite needed | | acres x 43560ft2/acre | 0 | ft2 |
| b. | Purchase Unit Cost | | | $0.00 | /ft2 |
| c. | Installation Unit Cost | | | $0.00 | /ft2 |
| d. | Total Geonet Composite unit cost | | (b + c) | $0.00 | /ft2 |
| *e* | *Total Geonet Composite cost* | | *(a x d)* | ***$0*** | |

## *VIII.* GEOSYNTHETIC CLAY LINER

| | | | | | |
|---|---|---|---|---|---|
| a. | Quantity of liner needed | | acres x 43560 ft2/acre | 0 | ft2 |
| b. | Purchase unit cost | | | $0.00 | /ft2 |
| c. | Installation unit cost | | | $0.00 | /ft2 |
| d. | Total Clay Liner unit cost | | (b + c) | $0.00 | /ft2 |
| e. | *Total clay liner cost* | | *(a x d)* | ***$0*** | |

## *IX.* SOIL ADMIXTURE

| | | | | | |
|---|---|---|---|---|---|
| a. | Area to be capped | | acres x 4840 yd2 | 0 | yd2 |
| b. | Soil admixture unit cost | | per yd2 | $0.00 | per yd2 |
| c. | *Total Soil Admixture Cost* | | *(a x b)* | ***$0*** | |

## *X.* PROTECTIVE SOIL COVER (applicable for CDD landfills only)

| | | | | | |
|---|---|---|---|---|---|
| a. | Area to be capped | | acres x 4840 yd2/acre | 0 | yd2 |
| b. | Depth of soil needed | | in x (1/36)yd | 0.00 | yd |
| c. | Quantity of soil needed | | (a x b) | 0 | yd3 |
| d. | Percentage of soil from off-site | | % | 0% | |
| e. | Purchase Unit cost off-site material (to include delivery cost) | | per yd3 | $0.00 | /yd3 |
| f. | Percentage of soil from on-site | 100% | (1 - d) | 100% | |
| g. | Excavation unit cost (on-site material) | | per yd3 | $0.00 | per yd3 |
| h. | Total soil unit cost | | (d x e + f x g) | $0.00 | |
| i. | Placement and Spreading Unit Cost | | per yd3 | $0.00 | per yd3 |
| j. | Compaction unit cost | | per yd3 | $0.00 | per yd3 |
| k. | Total soil unit cost | | (h + I + j) | $0.00 | /yd3 |
| l. | Total soil cost | | | $0.00 | |
| m. | Percent compaction | 25% | | 25% | |
| o | *Total Topsoil Cost* | | *(h) x (1 + l)* | **$0** | |

## *XI.* SOIL TESTING

| | | | | | |
|---|---|---|---|---|---|
| a. | Number of acres to be capped | | | 0 | acres |
| b. | Testing unit cost (includes permeability tests and technician) | | | $0.00 | per acre |
| c. | *Total Soil Testing Unit Cost* | | *(a x b)* | ***$0*** | |

## *XII.* VEGETATIVE COVER

| | | | | | |
|---|---|---|---|---|---|
| a. | Number of acres to be vegetated | | | 0 | acres |
| b. | Unit cost for soil preparation, grading, seed, and fertilizer | | | $0.00 | per acre |
| c. | *Total Vegetative Cover Cost* | | *(a x b)* | ***$0*** | |

## XIII. LANDFILL GAS (LFG) MANAGEMENT SYSTEM

| | | | | | |
|---|---|---|---|---|---|
| a. | Number of acres of landfill to be closed | | | 0 | acres |
| b. | Number of LFG detection probes to be installed | 0 | (every 500' around cell) | 0 | wells |
| c. | Average number of LFG vents required per acre | | | 0 | vents |
| d. | Average cost per LFG vent | | | $0.00 | per vent |
| e. | Average LFG detection probe unit cost | | | $0.00 | per probe |
| f. | Total cost for LFG vents | | (a x c x d) | $0.00 | |
| g. | Total cost for LFG detection probes | | (b x e) | $0.00 | |
| *h.* | *Total Gas Management System Cost* | | *(f + g)* | ***$0*** | |

Sanitary Max. Spacing = 250 ft

CDD/Industrial Max. Spacing = 500 ft

## XIV GROUNDWATER MONITORING SYSTEM

| | | | | | |
|---|---|---|---|---|---|
| a. | Hydrogeologic study unit cost (includes boring costs, piezometer costs, pump test costs, etc.) | | $10,000 or as required | | |
| b. | Monitoring well construction unit cost (includes installation and materials for a 50' deep well; minimum of four wells must be installed) | | | $0.00 | per well |
| c. | Number of wells to be installed | | | 0 | wells |
| d. | Additional well length over 50' | | | 0 | LF |
| e. | Unit cost for additional well length over 50' | | | $0.00 | per VLF |
| f. | Total additional cost for well length over 50' | | (e x d) | $0.00 | |
| g. | Total Monitoring Well Construction Cost | | (b x c) | $0.00 | |
| *h.* | *Total Groundwater Monitoring System Cost* | | *(b x c) + (d x e)* | ***$0.00*** | |

## XV. MOBILIZATION/ DEMOBILIZATION

| | | | |
|---|---|---|---|
| *a.* | *Cost for Mobilization/ Demobilization* | *$15,000 or as required* | |

## XVI SURVEY AND DEED NOTATION

| | | | |
|---|---|---|---|
| *a.* | *Cost for Survey and Deed Notation* | *$2,000 or as required* | |

## XVI CLOSURE CERTIFICATION

| | | | |
|---|---|---|---|
| *a.* | *Closure Certification Costs* | *$2,000 or as required* | |

## *XVI* MISCELLANEOUS COSTS TO CLOSE

| | | | |
|---|---|---|---|
| *a.* | Erosion Control | $15,000 or as required | |
| *b.* | Storm Water Control | $5,000 or as required | |
| *c.* | *Total Miscellaneous Costs* | *(a + b)* | ***0*** |

## TOTAL CONSTRUCTION CLOSURE COSTS

**Total Unadjusted Closure Costs (TUCC)=**

*(I+II. . . XIV)* ***$0***

**City Cost Index (CCI) Appen B.=**

*1 = 100%* ***1***

**Total Adjusted Closure Costs (TACC)=**

*CCI x TUCC* ***0***

**Closure Cost Estimate Subtotal=**

*(TACC +XV. . . . XVIII)* ***0***

**Contingency (10%)=**

*(Subtotal x 0.1)* ***0***

**Engineering Fees=**

| | | |
|---|---|---|
| *Construction Documents(5% or as needed)* | *(Subtotal x 0.05)* | ***0*** |
| *Construction Quality Assurance (10% or as needed)* | (Subtotal x 0.1) | ***0*** |

**Total Closure Cost=**

*(Subtotal +Contingency + Engineering)* ***0***

# Worksheet 2: FORMAT FOR THE ESTIMATION OF POST-CLOSURE COSTS

Facility Name: 0
Permit Number: 0
Facility Address: 0
0
0
County Administrator:
OPM Representative Completing
Format: 0
Date Completed: 0-Jan-00

Sanitary and Industrial Landfills: Closure Costs - all sections except Section X
Post-Closure - all sections
CDD Landfills: Closure Costs - Sections X, XII, XIII, XIV, XV, XVI, XVII
Post-Closure - all sections

***FILL IN BOXES. THE REST WILL BE CALCULATED FOR YOU***

## *I.* GROUNDWATER MONITORING

| | | | | | |
|---|---|---|---|---|---|
| a. | Total number of monitoring wells | | | 0 | wells |
| b. | Total number of sampling events per year | | | 0 | samples/yr |
| c. | Other samples (e.g., QA/QC) | | samples/event | 0 | samples/yr |
| d. | Analysis costs (see worksheet 3 for minimum defaults) | | $/sample | $0.00 | /sample |
| e. | Total analysis costs | | (b+c) x d | $0.00 | |
| f. | Miscellaneous engineering fees/report | | $10,000 or as required | $0.00 | |
| g. | Mobilization | $150.00 | | $150.00 | /event |
| h. | Technician field costs | $40.76 | | $40.76 | /well |
| *i.* | Total sampling costs | (g x b) + (h x a x b) | (g x b) + (h x a x b) | $0.00 | |
| *k* | *Total Yearly Groundwater Monitoring Cost* | *(e + f + i)* | | ***$0.00*** | /yr |

## *II.* LANDFILL GAS MONITORING

| | | | | | |
|---|---|---|---|---|---|
| a. | Frequency of Testing | | | 0 | rounds/yr |
| b. | Cost of sampling per round | | | $0.00 | /round |
| c. | *Total Gas Monitoring Cost Per Year* | *(a x b)* | | ***$0*** | /yr |

## *III.* LEACHATE MANAGEMENT

| | | | | | |
|---|---|---|---|---|---|
| a. | Private disposal unit cost | | $/gallon | $0.00 | /gallon |
| b. | POTW disposal unit cost | | $/gallon | $0.00 | /gallon |
| c. | Direct discharge to POTW unit cost | | $/gallon | $0.00 | /gallon |
| d. | Amount of leachate generated from facility records or modeling | | | 0 | gallons/yr |
| e. | Hauling cost | | $/gallon | $0.00 | /gallon |
| f. | Total leachate management cost | | | ***$0*** | /yr |

## IV. ROUTINE MAINTENANCE AND REPAIRS

| | | | | | |
|---|---|---|---|---|---|
| a. | Mowing frequency | | usually 3 visits/year | 0 | visits/yr |
| b. | Area involved in maintenance and repairs | | | 0 | acres |
| c. | Mowing unit cost per visit | | | $0.00 | /acre/visit |
| d. | Total Mowing Cost Per Year | (a x b x c) | | $0.00 | /yr |
| e. | Fertilizer unit cost | | | $0 | /acre |
| f. | Total Fertilizer Cost Per Year | (b x e) | | $0.00 | /yr |
| g. | Area to reseed/year | 0 | usually 1/3 of landfill acreage/year | 0 | acres |
| h. | Reseeding unit cost | | | $0.00 | /acre |
| i. | Total Reseeding Cost Per Year | (g x h) | | $0.00 | /yr |
| k. | Mobilization/ Demobilization cost per year | | | $0 | /yr |
| l. | Cap erosion repair | 0 | usually 1% of cap area/year | 0 | acres |
| m. | Erosion repair unit cost | | Assumed 18"depth | $0.00 | /acre |
| n. | Total Erosion Repair Cost Per Year | (l x m) | | $0.00 | /year |
| *0* | *Total Maintenance and Repairs Cost Per Year* | *(d + f + l+k+n)* | | ***$0*** | **/yr** |

## *V.* VECTOR AND RODENT CONTROL

| | | | | |
|---|---|---|---|---|
| *a.* | *Total Vector and Rodent Control Costs Per Year* | *$2,000 or as required* | | **/yr** |

**Total Post-Closure Cost (TPCC)** | ***$0***

***City Cost Index (CCI) Appen B.=*** 100%=1 | ***1***

**Adjusted Total Costs (ATC) = (CCI) x TPCC**

**=** **$0 /yr**

**Length of Post-Closure Care Period**

**Total Post Closure Care Costs = ATC x Post Closure Period** **$0**

# Worksheet 3: Suggested and Minimum Default Values

| Item | description | cost | unit | source |
|---|---|---|---|---|
| **I. Native soil** | | | | |
| native soil | excavation | | 1.63 CY | Means 02315 400 0200 |
| loading | add 15% | | 0.24 CY | Means 02315 400 0020 |
| hauling | 12 CY truck 1/2 mile onsite | | 2.52 CY | Means 02320 200 0320 |
| TOTAL | Native Soil Excavation | | 4.39 CY | Means |
| | | | | |
| spread native soil | spread by dozer 50" haul | | 1.5 CY | Means 02315 300 5600 |
| | | | | |
| compact native soil | sheepsfoot 2 passes | | 0.37 CY | Means 02315 300 5600 |
| | | | | |
| **II. Topsoil** | | | | |
| topsoil | purchase proce delivered | | 13.1 CY | Means 02315 0200 7000 |
| spread topsoil | spread by dozer 50' haul | | 1.5 CY | Means 02315 410 2020 |
| compact topsoil | sheepsfoot 2 passes | | 0.37 CY | Means 02315 300 5600 |
| | | | | |
| **III. Drainage** | | | | |
| stone | purchase price delivered | | 7.5 CY | Means 02315 200 5000 |
| spread stone | spread by dozer 50' haul | | 1.31 CY | Means 02315 410 2000 |
| | | | | |
| **IV. and V.** | **Clay onsite and offsite** | | | |
| clay | purchase price delivered | | 4.11 CY | Means |
| soil | excavation | | 1.63 CY | Means 02315 400 0200 |
| clay | add 60% for clay | | 0.97 CY | Mans 02315 400 4100 |
| loading | add 15% | | 0.24 CY | Means 02315 400 0020 |
| hauling | 12 CY truck 1/2 mile onsite | | 2.52 CY | Means 02320 200 0320 |
| TOTAL | clay excavation | | 5.36 CY | Means |
| | | | | |
| spread clay | spread by dozer 50' haul | | 1.38 CY | Means 02314 505 0010 |
| | | | | |
| compact clay | sheepsfoot 4 passes | | 0.83 CY | Means 02315 300 6030 |
| compact clay | vibrating roller 4 passes | | 0.96 CY | Means 02315 300 6220 |
| TOTAL | clay compaction | | 1.79 CY | Means |
| | | | | |
| **VI. Drainage tile** | | | | |
| pipe | 6"pvc | | 4.22 LF | Means 02620 210 3020 |
| trenching | 48" deep compact add 50% | | 0.99 LF | Means 02315 940 2600 |

| | | | |
|---|---|---|---|
| **VII. Synthetic Membrane** | | | |
| 60 mil HDPE | | 0.38 SF | Means 33 08 0572 |
| 40 mil PVC | | 0.25 SF | Means 33 08 0563 |
| 40 mil VFPE | | 0.28 SF | Means 33 08 0543 |
| installation and testing | Means has a mistake here | 0.1 SF | Local Installer Aug 2000 |
| | | | |
| **VIII. Geotextile Filter Fabric** | | | |
| 10 oz Geotextile | | 0.73 SF | Means 33 080533 |
| installation | Means has a mistake here | 0.06 | Local Installer Aug 2000 |
| | | | |
| **Geonet/geocomposite** | | | |
| Geonet .25 inch | | 0.14 SF | Means 33 08 0511 |
| Geonet Geotextile 1 side | | 0.3 SF | Means 33 08 0512 |
| geonet Geotextile 2 sides | | 0.35 SF | Means 33 08 0513 |
| installation | Means has a mistake here | 0.08 SF | Local Installer Aug 2000 |
| | | | |
| **Geosynthetic clay liner** | | | |
| bentomat | Installed cost | 0.4 SF | Local Installer Aug 2000 |
| | | | |
| **XI. Soil Testing** | | | |
| Density | 5/acre 35.36 EA | 177.8 AC | Means 33 08 0506 02231 2101 |
| Moisture Density Curve | 1/acre | 71.13 AC | Means 33 08 0506 02231 2301 |
| Grain Size | 1/acre | 55.57 AC | Means 33 08 0506 02231 2302 |
| Moisture | 5/acre 10.48 ea | 52.4 AC | Means 33 08 0506 02231 2303 |
| Undisturbed Permeability | 3/acre 18" soil 400.48EA | 1201.4 AC | Means 33 08 0506 02231 2306 |
| Atterburg Limits | 1/acre | 82.93 AC | Means 3308 0506 02231 2310 |
| TOTAL | Soil Testing | 1641.23 AC | |
| | | | |
| **XII. Vegetative cover** | | | |
| hydroseeding | seed and fertilizer | 1895 AC | Means 029 308 4600, 1995 |

**XIII. Landfill Gas Management System**

| | | | | |
|---|---|---|---|---|
| Probe Cost | Assume 50' Probe, 20' Screen, 45' filter pack | | | |
| boring | 11" hollow stem auger (50' @ 25.17/LF) | 1258.5 | EA | Means 33 23 1103 |
| screen | 2" schedule 40 (20' @ 9.85/LF) | 197 | EA | Means 33 23 0211 |
| casing | 2" schedule 40 (30'@6.86/LF) | 205.8 | EA | Means 33 23 0101 |
| filter pack | 2" screen filter pack (45'@7.54/LF) | 339.3 | EA | Means 33 23 1401 |
| bentonite seal | | 27.41 | EA | Means 33 23 2101 |
| surface pad | | 154.18 | EA | Means 33 23 1502 |
| TOTAL | Probe Cost | 2182.19 | EA | Means |
| | | | | |
| Gas Vent | Assume 40' vent,20' screen, 30" diam. | | | |
| drilling | bored piles 30" dia (40'@41/LF) | 1640 | EA | Means 02465 600 0300 |
| screen | 6" sch 40 (20'@21.90/LF) | 438 | EA | Means 33 23 0203 |
| casing | 6" sch 40 (20'@11.89/LF) | 237.8 | EA | Means 33 23 0103 |
| stone | 5.93 CY @ 26.00/CY | 154 | EA | Means 023 15 130 0100 |
| bentonite seal | Use 12" Means 160.30/CF | 1282.4 | EA | Means 33 23 1806 |
| TOTAL | Vent Cost | 3752.2 | | |

**XIV. Groundwater Monitoring**

| | | | | |
|---|---|---|---|---|
| well boring, hollow stem auger | Up to 100 foot depth (50' @ 16.11/LF) | 805.5 | EA | Means 33 23 1101 |
| casing | 2" diameter pvc, sch 40 (40'@6.86/LF) | 274.4 | EA | Means 33 23 0101 |
| screen | 2" diameter pvc, sch 40 (10'@9.85/lf) | 98.5 | EA | Means 33 23 0201 |
| | | 1178.4 | | Means |

**Groundwater Monitoring**

| | | | | |
|---|---|---|---|---|
| conductivity | | 11.75 | EA | Means 33 02 0505 |
| pH | | 9.13 | EA | Means 33 02 0505 |
| TOC | | 23.33 | EA | Means 33 02 0505 |
| TOX | | 90 | EA | Means 33 02 0505 |
| hardness | | 11.5 | EA | Means 33 02 1639 |
| sodium | | 11.56 | EA | Means 33 02 0508 |
| chloride | | 16.67 | EA | Means 33 02 1653 |
| iron | | 11.56 | EA | Means 33 02 0508 |
| lead | | 11.56 | EA | Means 33 02 0508 |
| Cost of Analysis/sample | | 197.06 | EA | Means Analysis |
| | | | | |
| Appendix 5.5 Constituents | $180-$225 depending on number of wells sampled | 200.00 | Well or EA | Local consultant January 2001 |
| Appendix 5.1 Constituents | $640-$810 depending on the number of wells sampled | 725.00 | Well or EA | Local Consultant January 2001 |
| | | | | |
| mobilization | $75/man assume 4 wells = 37.5/well | 37.5 | Well | Means 33 01 0204 |
| | 2 field engineers @ 20.38/hr, 1hr/well | 40.76 | Well | Means |
| TOTAL | Sampling and Analysis | 1200.32 | Well | Means |

## MINIMUM DEFAULTS

$500 for Phase I and Detection

1500 for Phase II, Phase III, Assessment Monitoring.

Corrective Action is site specific.

| | | | | |
|---|---|---|---|---|
| **Gas Monitoring** | | | | |
| Hnu Daily Rental | | 85 | day | Means 33 02 0342 |
| mobilization | $75 100 miles | 75 | event | Means 33 01 02 04 |
| field technician | 1 technician @ 20.38/hr for 8 hours | 163.04 | event | Means |
| engineer | report preparation @ $70/hr for 4 hours | 280 | event | estimate |
| | | 603.04 | | |
| **Leachate Management** | | | | |
| **Routine Maintenance and Repairs** | | | | |
| Mowing | 1.82/1000sf=79.00/acre | 79 | AC | Means 029 0700 4200, 1995 |
| reseeding | 1895/acre once/5 years 379/year | 379 | AC | Means 029 308 4600, 1995 |
| erosion repair | | | | |
| native soil | excavation | 1.63 | CY | Means 02315 400 0200 |
| loading | add 15% | 0.24 | CY | Means 02315 400 0020 |
| hauling | 12 CY truck 1/2 mile onsite | 2.52 | CY | Means 02320 200 0320 |
| TOTAL | Native Soil Excavation | 4.39 | CY | Means |
| spread native soil | spread by dozer 50" haul | 1.5 | CY | Means 02315 300 5600 |
| compact native soil | sheepsfoot 2 passes | 0.37 | CY | Means 02315 300 5600 |
| TOTAL | erosion repair | 6.26 | CY | |
| Assume 1% area repaired yearly | 24 CY/acre/year post closure | 150.24 | ACRE | Assumption |
| **Leachate Management** | | | | |
| Treatment at POTW | based on 1.50/1000 gal | 0.15 | Gal | Means 33 19 7103 |
| hauling | | 0.25 | Gal | Means 33 19 7103 |